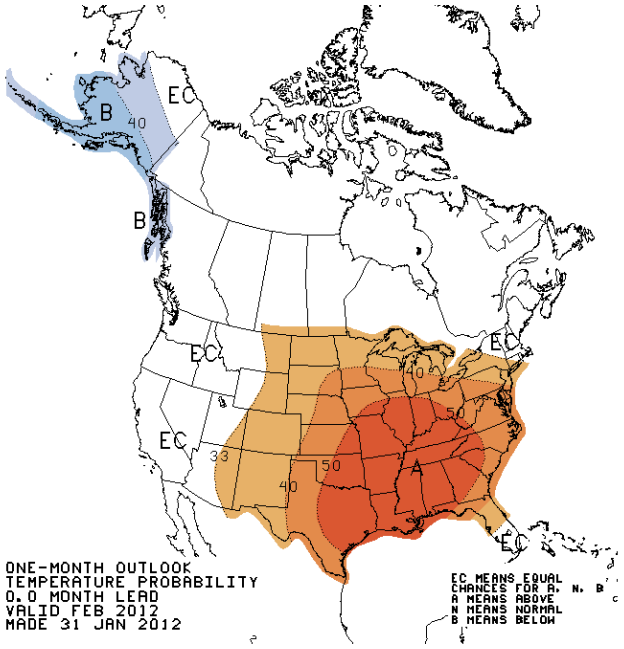
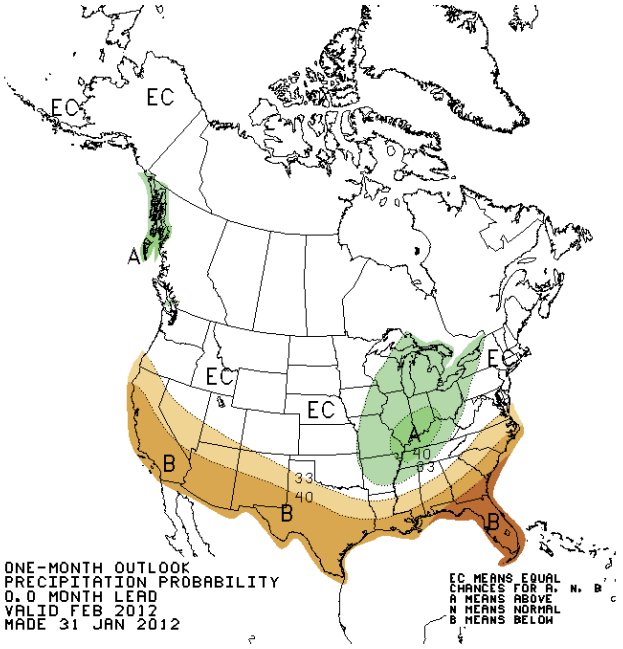
La Niña Historical Impacts on South Central Texas From the Fall 1949-Spring of 1950 to the Fall 2010-Spring 2011

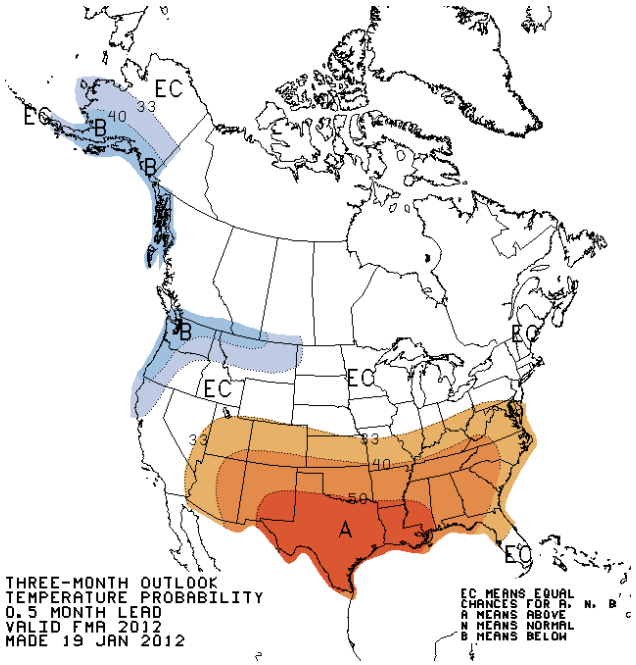
The Climate Prediction Center on Thursday, January 19, 2012 issued outlooks for February to April 2012 through February 2013 to April 2013, that heavily weight expected impacts for the U.S. from La Niña for the Winter of 2011/2012 through the Spring of 2012. These outlooks include 3 month periods from February 2012 to April 2012 through February 2013 to April 2013. La Niña conditions highlight cooler than usual sea surface temperatures across the Tropical Pacific. This phenomena influences wind and weather patterns from the Fall through the Winter to Spring across the U.S. During La Niña, the probabilities of above normal temperatures and below median precipitation are enhanced in much of the southern U.S. from the Fall through the Winter and Spring. The maximum impacts are usually from January to March. With the presence of La Niña, the active jet stream, that can bring increasing chances of above normal precipitation, is displaced north of the Southern U.S., over the northern part of the country.

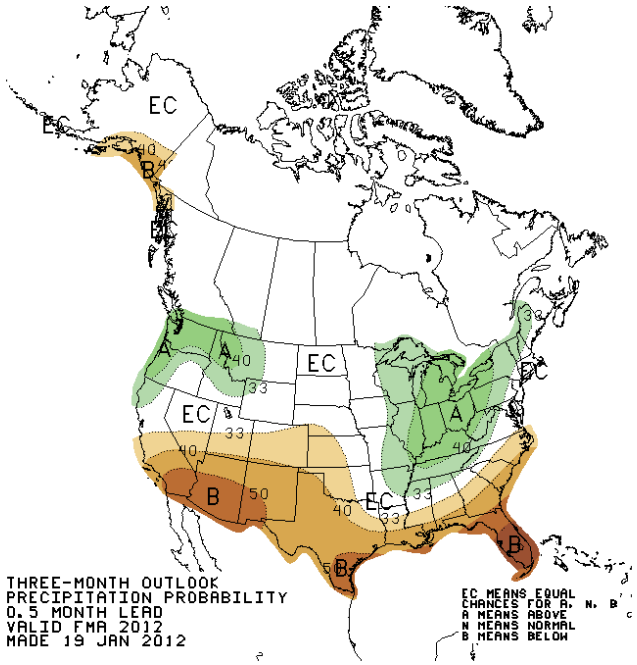
The revised February 2012 Outlook issued Tuesday, January 31, 2012 across South Central Texas from the National Weather Service Climate Prediction Center calls for the average monthly temperature in February 2012 to have a 40 to 50 percent chance of being warmer than usual; a 33.3 percent chance of being near normal; and a 16.7 to 26.7 percent chance of being cooler than usual. The outlook for rainfall shows a 40 percent chance of being drier than usual; a 33.3 percent chance of near normal rain; and a 26.7 percent chance of being wetter than normal in February 2012. The maps below show the February 2012 outlook issued by the National Weather Service Climate Prediction Center on Tuesday, January 31, 2012.





The 90 Day outlook for South Central Texas from February to April 2012 shows elevated odds of warmer than usual temperatures and below median precipitation. The 3 month rainfall outlook from February to April 2012 shows a 40 to 50 percent chance of rainfall less than normal; a 33.3 percent chance of rainfall near normal; and a 16.7 to 26.7 percent chance of rainfall above normal. The outlook from February to April 2012 for the average February to April temperature shows a 50 percent chance of warmer than usual conditions; a 33.3 percent chance of near normal; and a 16.7 percent chance of being cooler than usual from February to April of 2012. The maps below show the February to April 2012 outlook issued by the National Weather Service Climate Prediction Center on Thursday, January 19, 2012.





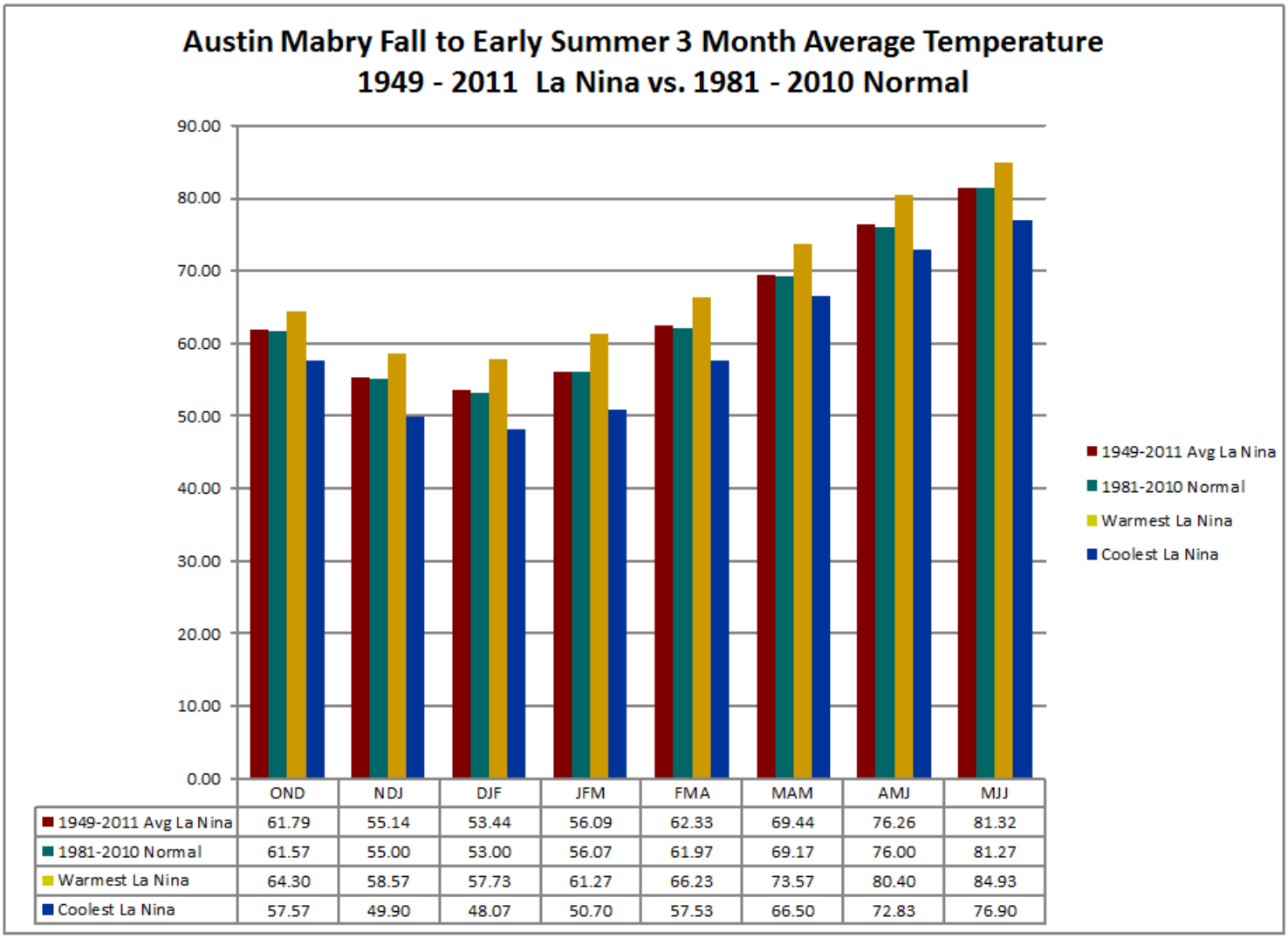
To See All the Outlooks for rainfall and temperature from the Climate Prediction Center Click Here to See All Outlooks. The Climate Prediction Center is currently downscaling 3 Month Outlooks for the average temperature over a 3 Month Time Span for locations across South Central Texas. Click Here to see Downscaled 3 Month Temperature Outlooks for South Central Texas. Note: All Outlooks reference the 1981 to 2010 Normal's.

On average La Niña conditions favor warmer and drier periods from the Fall through the Winter and Spring. The averages do not consider the extremes or variability that shows up from time to time. A chaotic and complex variety of atmospheric phenomena in the Global climate system combine in many ways to create unique fall, winter, and spring weather patterns from year to year across South Central Texas. This determines the duration and magnitude of warm, cold, wet or dry periods. Although the averages show warmer and drier conditions from the Fall to Winter to Spring across South Central Texas during La Niña, there have been a few times that wetter and near normal or wetter and cooler than usual conditions have come. These were the times that other factors in the Global Weather System overrode the effects of La Niña. One feature that does show up with La Niña Fall and Winter periods, is the tendency for more extremes from warm to cold and cold to warm, as the drier ground, coupled with weather patterns that bring more extremes, make for larger temperature contrasts.

Although not favored most of the time, since the Fall of 1949 and Winter of 1950, occasional cold outbreaks and periods of heavy rain and precipitation came to South Central Texas during a few of the La Niña events. A few significant Arctic Outbreaks have come during La Niña Events, including December 1950; late January to February 1951; January and February 1985; February 1989; and January to February of 1996. From December of 2010 through Mid February 2011, several cold outbreaks came to South Central Texas, associated with a number of freezes. Another feature that shows up with La Niña winters is more extremes between warm and cold, especially with the dry winters. February of 1996 was an extreme example where it was very cold at the beginning of the month, then set all time February Highs on February 21st, followed by very cold conditions at the end of February 1996. The February monthly record high at Del Rio of 99 on February 21, 1996 was later tied, when the high was 99 on February 25, 2008 and February 27, 2011, also during La Niña winters. The high on February 21, 1996 at Austin Mueller Airport was 99, at Austin Bergstrom 101, and at San Antonio 100 on February 21, 1996.

The Winter of 1964/1965 had rainfall wetter than usual for Austin and San Antonio. The winter of 1967/1968 was wetter than usual at Austin, Del Rio, and San Antonio. In January 1968, a slow moving cutoff low came across the area from the west and caused a January flood, similar to the December 1991 floods. The January 1968 case occurred during a weak La Niña period, while the December of 1991 case occurred during a moderate to strong El Nino. January 1968 was the wettest January at San Antonio and the 4th wettest January at Austin Mabry. In November of 1974, during a La Niña period, a heavy rain event came to Austin, and caused flooding. From the Fall of 1984 through the Winter of 1985, during a La Niña period, wetter than usual conditions came most of the time, as relief from the dry period in 1984 came in the Fall of 1984. There were also a number of cold outbreaks in January and February of 1985. This included the heavy snow event that came in January 1985, a record for San Antonio and Del Rio and the seventh heaviest snow for Austin. In January 1985 the first snow event came January 2nd followed by a 2nd snow event from January 11th to 13th, 1985. January 1985 holds the record for the most snow in a month at San Antonio, 15.9 inches of snow, and at Del Rio, with 9.8 inches of snow. For snowfall at Austin January 1985 comes in 2nd place with 7.5 inches of snow, after the record of 9.7 inches of snow in November 1937. Floods from a heavy rain event in October 1998 during La Niña changed quickly to dry conditions from Mid November 1998 to January 1999. The dry conditions continued through the Winter of 1999. In the La Niña periods from the Fall of 2000 through the Spring of 2001, wetter than usual conditions came, accompanied by occasional cold outbreaks.

La Niña Composites from the Fall of 1949 to Spring and early Summer of 1950 through the Fall of 2010 to Spring and early Summer of 2011 are shown below. These charts show the average rainfall and temperature during La Niña Events for 3 month time periods, from October to December, OND; November to January, NDJ; December to February, DJF; January to March, JFM; February to April, FMA; March to May, MAM; April to June, AMJ; and May to July, MJJ. The charts also show the warmest, coolest, driest, and wettest 3 Month Periods during the La Niña events since the Fall of 1949 to Spring and early Summer of 1950. Although the averages and frequency of occurrence over a 3 month period were warmer and drier than usual, the averages and frequency of occurrence do not take into account episodic cold outbreaks in winter or heavy precipitation events that have shown up.

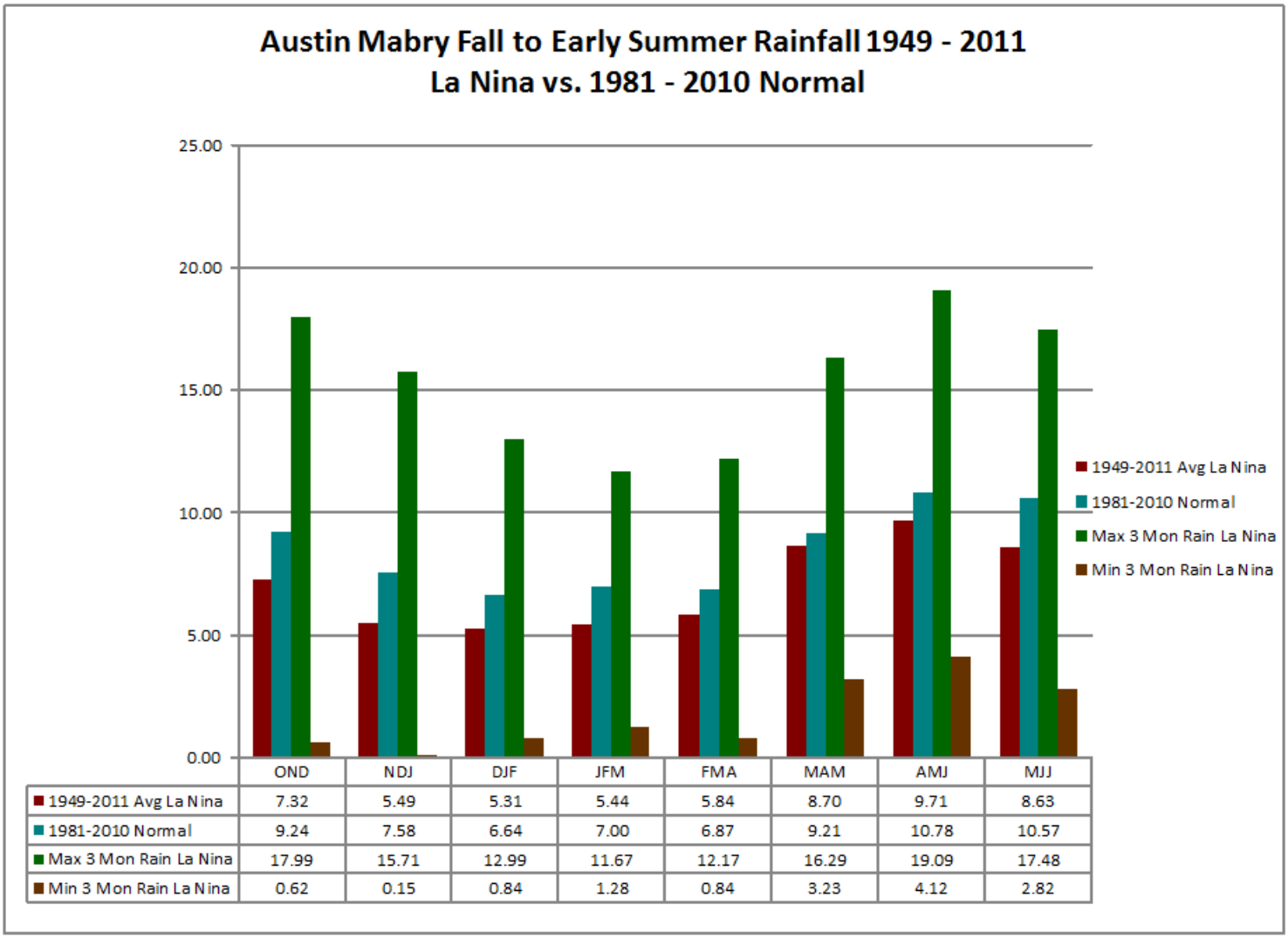


	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
1949-2011 Avg La Nina	61.79	55.14	53.44	56.09	62.33	69.44	76.26	81.32
1981-2010 Normal	61.57	55.00	53.00	56.07	61.97	69.17	76.00	81.27
Warmest La Nina	64.30	58.57	57.73	61.27	66.23	73.57	80.40	84.93
Coolest La Nina	57.57	49.90	48.07	50.70	57.53	66.50	72.83	76.90

Years of Temperature Extremes for Austin Mabry during La Nina Events...

3 Month Times	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
Warmest La Nina	64.30	58.57	57.73	61.27	66.23	73.57	80.40	84.93
Year	1988	1988-1989	1999-2000	2000	2000	2011	2011	2011
La Nina Average	61.79	55.14	53.44	56.09	62.33	69.44	76.26	81.32
1981-2010 Normal	61.57	55.00	53.00	56.07	61.97	69.17	76.00	81.27
Coolest La Nina	57.57	49.90	48.07	50.70	57.53	66.50	72.83	76.90
Year	2000	2000-2001	1967-1968	1968	1968	1965	1976	1976

Legend...
OND-Oct/Nov/Dec; NDJ-Nov/Dec/Jan; DJF-Dec/Jan/Feb; JFM-Jan/Feb/Mar
FMA-Feb/Mar/Apr; MAM-Mar/Apr/May; AMJ-Apr/May/Jun; MJJ-May/Jun/Jul



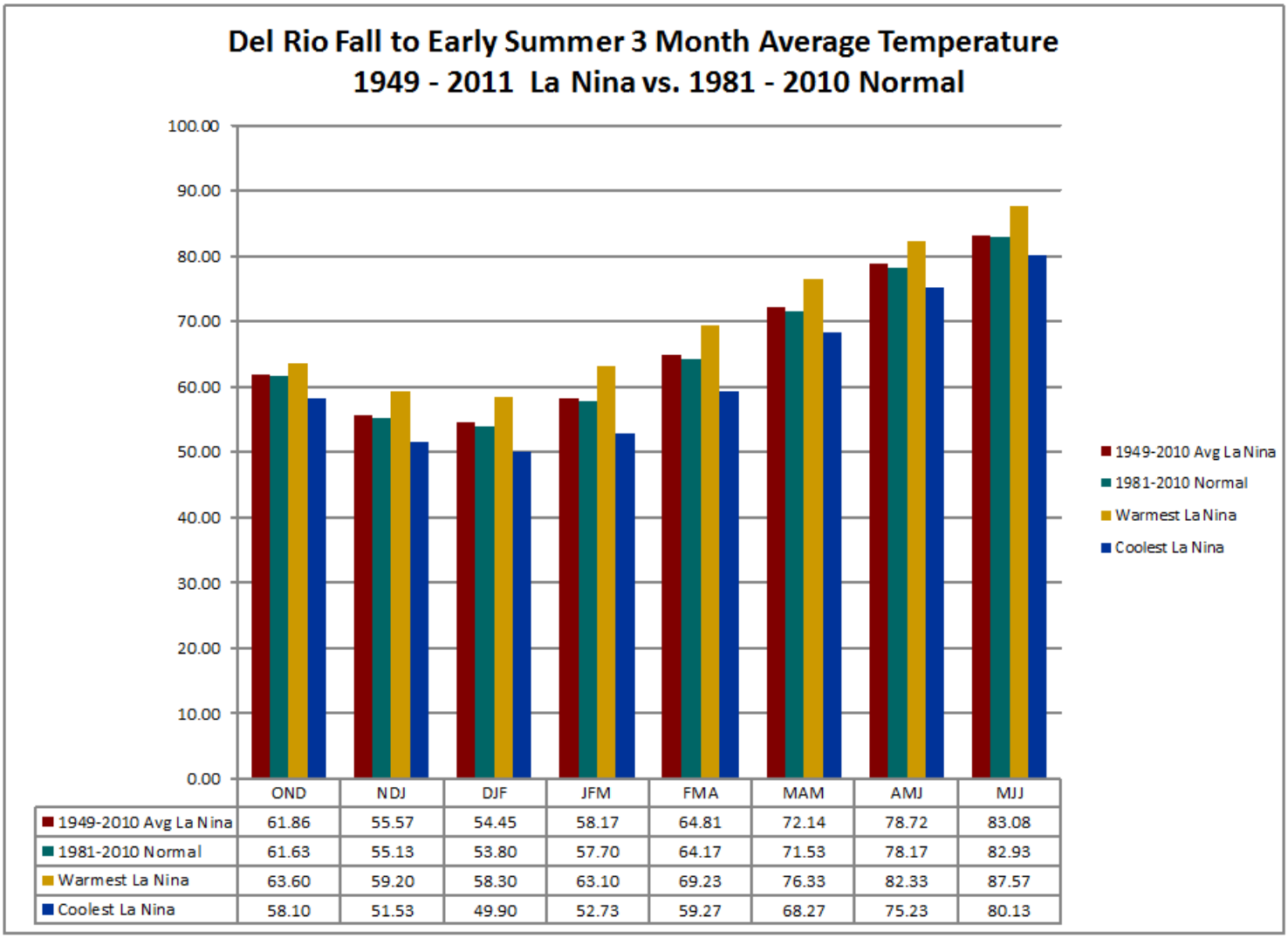
	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
1949-2011 Avg La Nina	7.32	5.49	5.31	5.44	5.84	8.70	9.71	8.63
1981-2010 Normal	9.24	7.58	6.64	7.00	6.87	9.21	10.78	10.57
Max 3 Mon Rain La Nina	17.99	15.71	12.99	11.67	12.17	16.29	19.09	17.48
Min 3 Mon Rain La Nina	0.62	0.15	0.84	1.28	0.84	3.23	4.12	2.82

Years of Rainfall Extremes for Austin Mabry during La Nina Events...

3 Month Times	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
Wettest La Nina	17.99	15.71	12.99	11.67	12.17	16.29	19.09	17.48
Year	1998	1967-1968	1967-1968	1968	1950	1976	1975	1975
La Nina Average	7.32	5.49	5.31	5.44	5.84	8.70	9.71	8.63
1981-2010 Normal	9.24	7.58	6.64	7.00	6.87	9.21	10.78	10.57
Driest La Nina	0.62	0.15	0.84	1.28	0.84	3.23	4.12	2.82
Year	1950	1970-1971	1970-1971	1996	2011	1971	1971	2008

Legend...

OND-Oct/Nov/Dec; NDJ-Nov/Dec/Jan; DJF-Dec/Jan/Feb; JFM-Jan/Feb/Mar
FMA-Feb/Mar/Apr; MAM-Mar/Apr/May; AMJ-Apr/May/Jun; MJJ-May/Jun/Jul



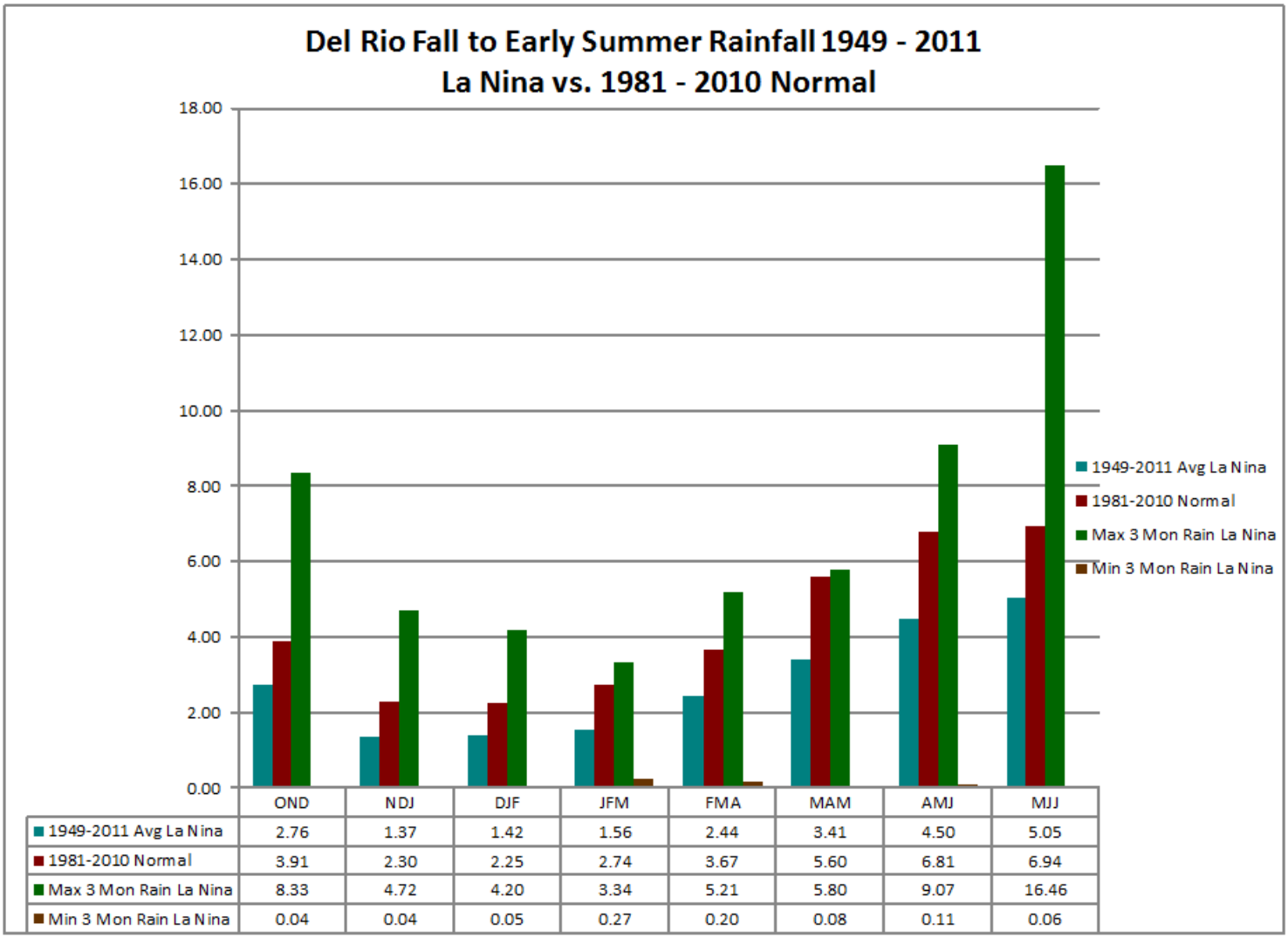
	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
1949-2010 Avg La Nina	61.86	55.57	54.45	58.17	64.81	72.14	78.72	83.08
1981-2010 Normal	61.63	55.13	53.80	57.70	64.17	71.53	78.17	82.93
Warmest La Nina	63.60	59.20	58.30	63.10	69.23	76.33	82.33	87.57
Coolest La Nina	58.10	51.53	49.90	52.73	59.27	68.27	75.23	80.13

Years of Temperature Extremes at Del Rio during La Nina Events...

3 Month Times	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
Warmest La Nina	63.60	59.20	58.30	63.10	69.23	76.33	82.33	87.57
Year	1962	1949-1950	1949-1950	2000	200000	2011	2011	1996
La Nina Average	61.86	55.57	54.45	58.17	64.81	72.14	78.72	83.08
1981-2010 Normal	61.63	55.13	53.80	57.70	64.17	71.53	78.17	82.93
Coolest La Nina	58.10	51.53	49.90	52.73	59.27	68.27	75.23	80.13
Year	2000	2000-2001	1967-1968	1968	1968	1968	1976	1971

Legend...

OND-Oct/Nov/Dec; NDJ-Nov/Dec/Jan; DJF-Dec/Jan/Feb; JFM-Jan/Feb/Mar
FMA-Feb/Mar/Apr; MAM-Mar/Apr/May; AMJ-Apr/May/Jun; MJJ-May/Jun/Jul



	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
1949-2011 Avg La Nina	2.76	1.37	1.42	1.56	2.44	3.41	4.50	5.05
1981-2010 Normal	3.91	2.30	2.25	2.74	3.67	5.60	6.81	6.94
Max 3 Mon Rain La Nina	8.33	4.72	4.20	3.34	5.21	5.80	9.07	16.46
Min 3 Mon Rain La Nina	0.04	0.04	0.05	0.27	0.20	0.08	0.11	0.06

Years of Rainfall Extremes at Del Rio during La Nina Events...

3 Month Times	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
Wettest La Nina	8.33	4.72	4.20	3.34	5.21	5.80	9.07	16.46
Year	2000	1984-1985	1984-1985	1968	1968	1965	1999	1976
La Nina Average	2.76	1.37	1.42	1.56	2.44	3.41	4.50	5.05
1981-2010 Normal	3.91	2.30	2.25	2.74	3.67	5.60	6.81	6.94
Driest La Nina	0.04	0.04	0.05	0.27	0.20	0.08	0.11	0.06
Years	1950 2010	1950-1951 1999-2000	1973-1974	2011	2011	1956	1956	1956

Legend...

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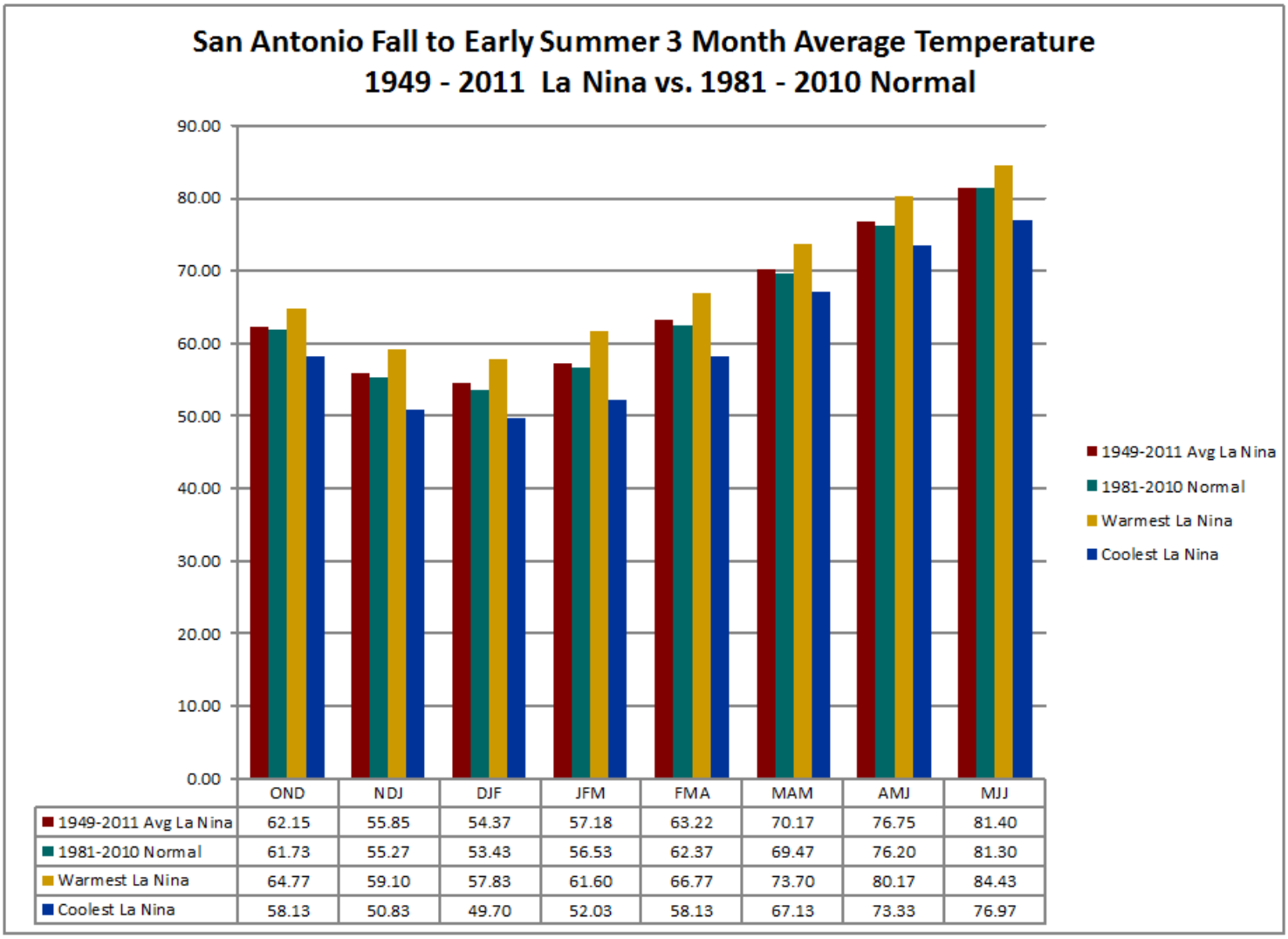
FMA-Feb/Mar/Apr; MAM-Mar/Apr/May; AMJ-Apr/May/Jun; MJJ-May/Jun/Jul



	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
1949-2011 Avg La Nina	62.15	55.85	54.37	57.18	63.22	70.17	76.75	81.40
1981-2010 Normal	61.73	55.27	53.43	56.53	62.37	69.47	76.20	81.30
Warmest La Nina	64.77	59.10	57.83	61.60	66.77	73.70	80.17	84.43
Coolest La Nina	58.13	50.83	49.70	52.03	58.13	67.13	73.33	76.97

Years of Temperature Extremes at San Antonio during La Nina Events...

3 Month Times	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
Warmest La Nina	64.77	59.10	57.83	61.60	66.77	73.70	80.17	84.43
Year	1971 1988	1988-1989	1970-1971	2000	2000	2011	2011	1996
La Nina Average	62.15	55.85	54.37	57.18	63.22	70.17	76.75	81.40
1981-2010 Normal	61.73	55.27	53.43	56.53	62.37	69.47	76.20	81.30
Coolest La Nina	58.13	50.83	49.70	52.03	58.13	67.13	73.33	76.97
Year	2000	2000-2001	1967-1968	1968	1968	1968	1976	1976

Legend...

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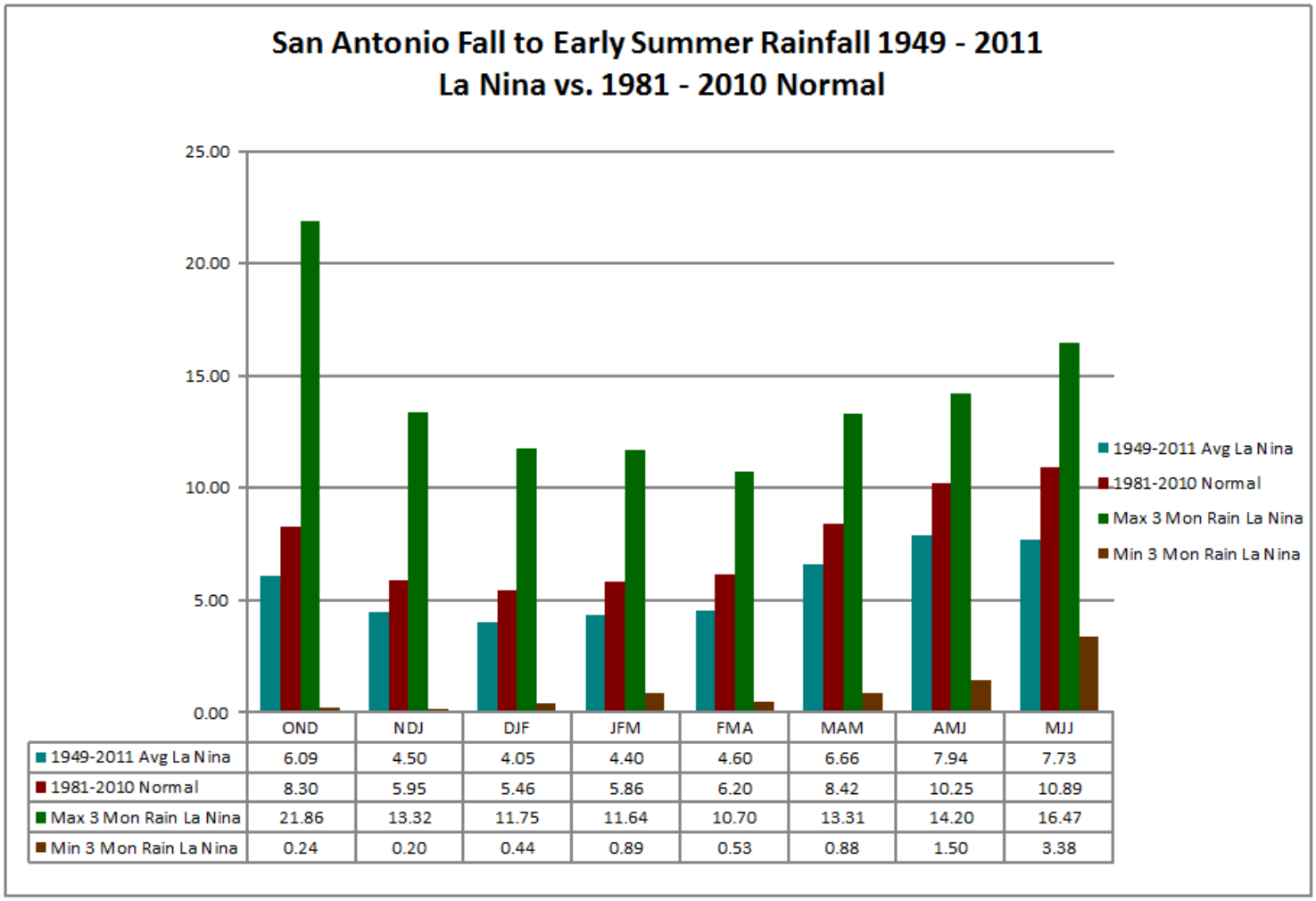


	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
1949-2011 Avg La Nina	6.09	4.50	4.05	4.40	4.60	6.66	7.94	7.73
1981-2010 Normal	8.30	5.95	5.46	5.86	6.20	8.42	10.25	10.89
Max 3 Mon Rain La Nina	21.86	13.32	11.75	11.64	10.70	13.31	14.20	16.47
Min 3 Mon Rain La Nina	0.24	0.20	0.44	0.89	0.53	0.88	1.50	3.38

Years of Rainfall Extremes at San Antonio during La Nina Events...

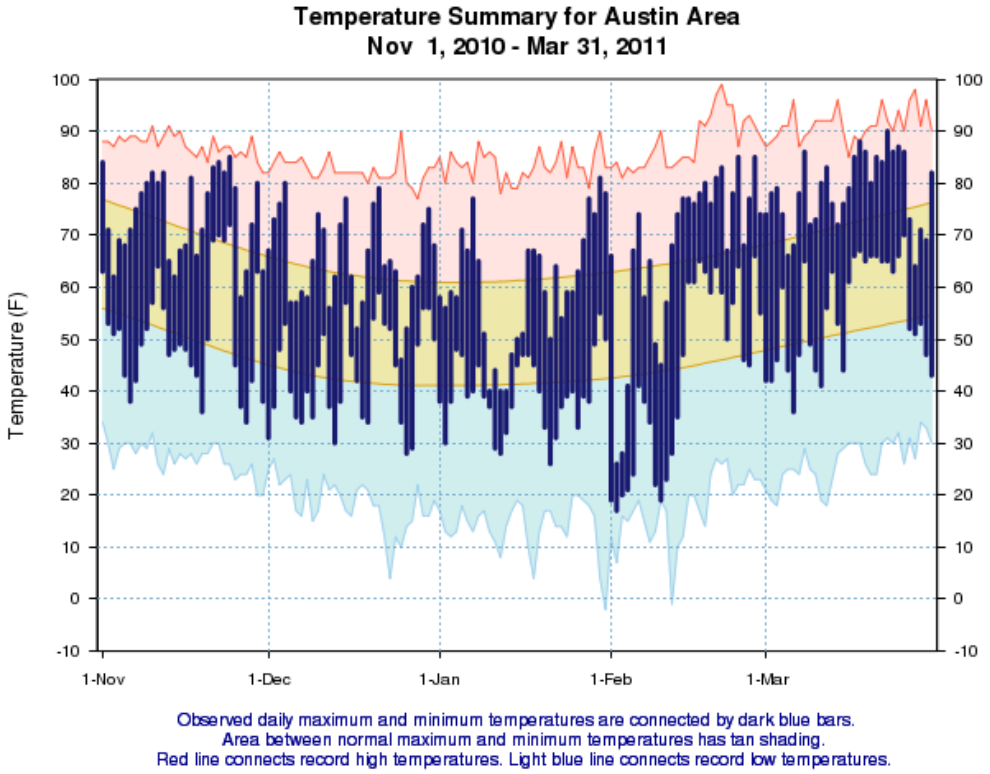
3 Month Times	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ
Wettest La Nina	21.86	13.32	11.75	11.64	10.70	13.31	14.20	16.47
Year	1998	1967-1968	1967-1968	1968	1965	1972	1975	1985
La Nina Average	6.09	4.50	4.05	4.40	4.60	6.66	7.94	7.73
1981-2010 Normal	8.30	5.95	5.46	5.86	6.20	8.42	10.25	10.89
Driest La Nina	0.24	0.20	0.44	0.89	0.53	0.88	1.50	3.38
Year	1950	1970-1971	1998-1999	1971	2011	2011	2008	2011

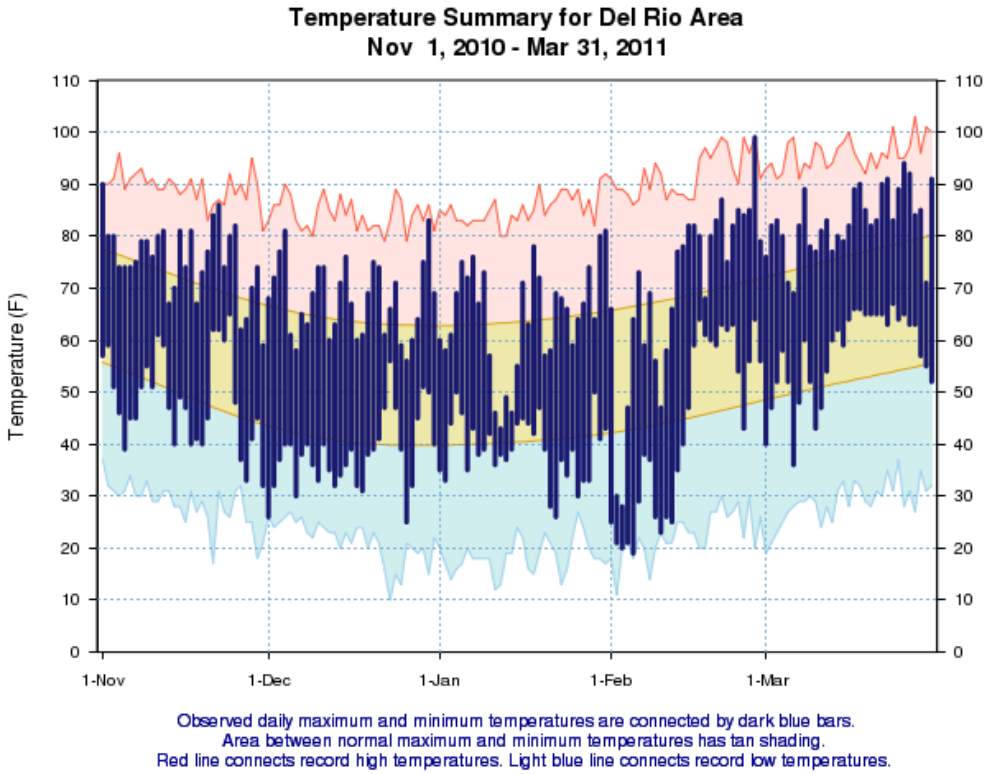
Legend...

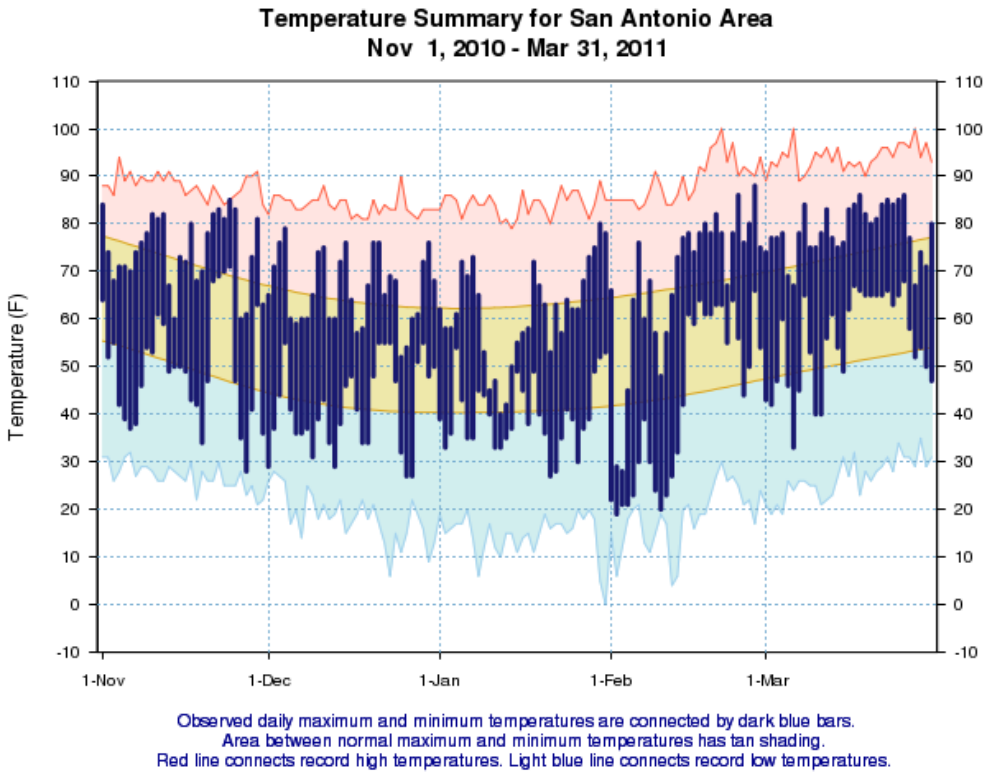
OND-Oct/Nov/Dec; NDJ-Nov/Dec/Jan; DJF-Dec/Jan/Feb; JFM-Jan/Feb/Mar
FMA-Feb/Mar/Apr; MAM-Mar/Apr/May; AMJ-Apr/May/Jun; MJJ-May/Jun/Jul

In the dry Fall to Winter periods, as mentioned above, extremes from warm to cold and cold to warm have come during La Nina periods. This also can set up more potential freezing nights, as the dry conditions promote better cooling at night.

The charts below show the daily highs and lows from November 1, 2010 to March 31, 2011, the La Nina period from the Fall of 2010 to Spring of 2011.







Times Used in these composites...

La Nina and associated weather periods from 1949 to 2011 used for these 3 month composites of average temperature and 3 month rainfall are listed below. Some of the ending times extended beyond when the official La Nina ended, yet were included due to lag times in weather patterns, when conditions change from La Nina to ENSO Nuetral..

Legend...
OND-Oct/Nov/Dec; NDJ-Nov/Dec/Jan; DJF-Dec/Jan/Feb; JFM-Jan/Feb/Mar
FMA-Feb/Mar/Apr; MAM-Mar/Apr/May; AMJ-Apr/May/Jun; MJJ-May/Jun/Jul

Time Periods from the Fall of 1949 to Spring of 2011...
OND 1949 TO MJJ 1950
OND 1950 TO MJJ 1951
OND 1954 TO MJJ 1955
OND 1955 TO MJJ 1956
OND 1956 TO JFM 1957
OND 1962 TO MJJ 1963
OND 1964 TO AMJ 1965
OND 1967 TO MJJ 1968
OND 1970 TO MJJ 1971
OND 1971 TO MAM 1972
OND 1973 TO MJJ 1974
OND 1974 TO MJJ 1975
OND 1975 TO MJJ 1976
OND 1984 TO MJJ 1985
OND 1988 TO MJJ 1989
OND 1995 TO MJJ 1996
OND 1998 TO MJJ 1999
OND 1999 TO MJJ 2000
OND 2000 TO MJJ 2001
OND 2007 TO MJJ 2008
OND 2008 TO AMJ 2009
OND 2010 TO MJJ 2011